Malartic
Hygrade
Gold Mines
(Canada) Ltd.

Annual Report
1975

Malartic
Hygrade
Gold Mines
(Canada) Ltd.

Officers

J. S. Belton	President
H. Peter Jarvis	Vice-President
A. Leonard Fosbrooke	Secretary-Treasurer

Directors

A. Leonard Fosbrooke	Montreal, Canada
H. Peter Jarvis	Toronto, Canada
Francisco Paesa	Geneva, Switzerland
Lord Willis of Chislehurst	London, England

Registrar and Transfer Agents

Guaranty Trust Company of Canada
Toronto, Ontario, and Montreal, Quebec

Auditors

Harry and Company, Chartered Accountants,
Agincourt, Ontario, Canada

Head Office

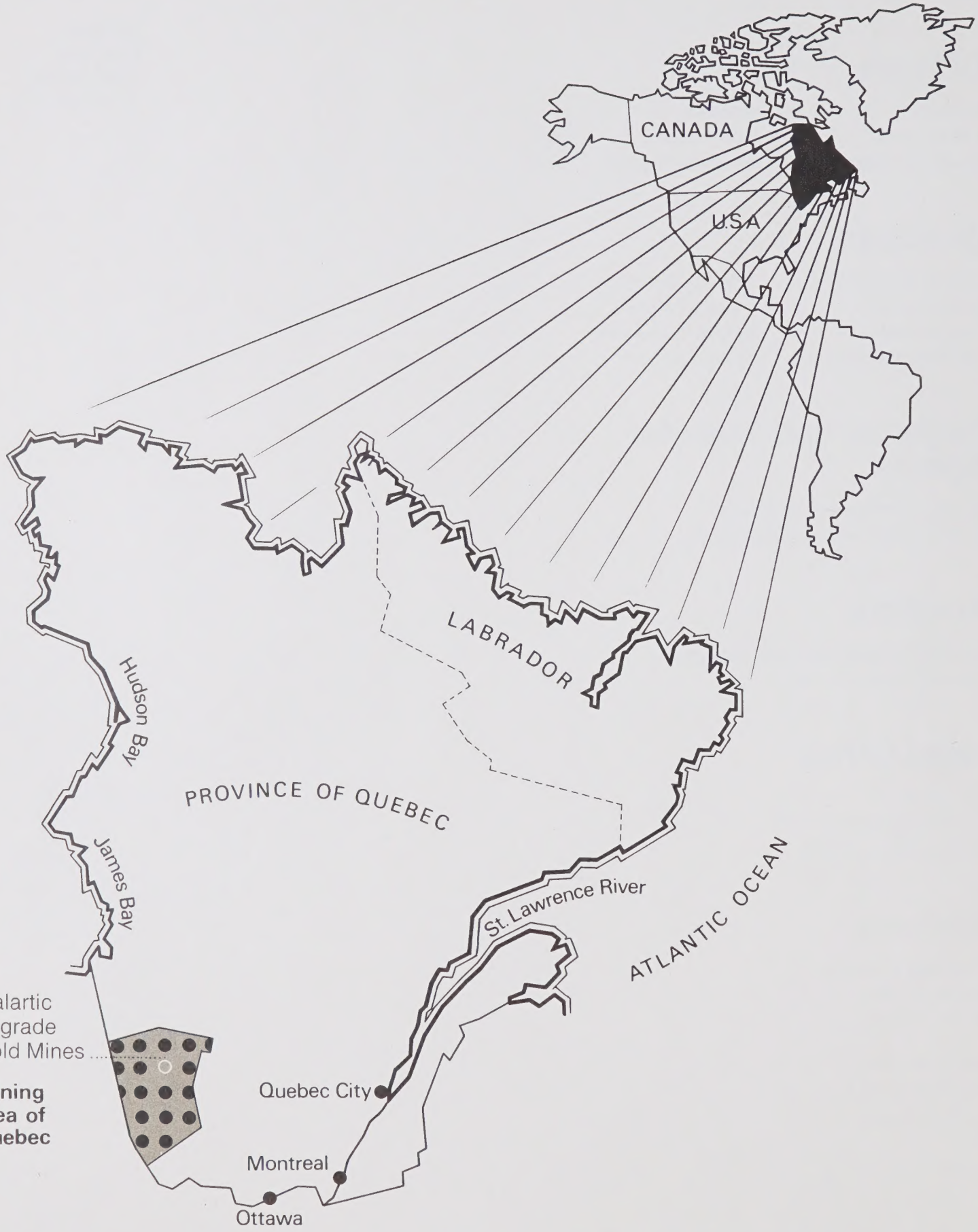
P.O. Box 34,
Toronto — Dominion Centre,
Toronto, Ontario, Canada

Bankers

Royal Bank of Canada,
20 King St., West,
Toronto, Canada

Bank of Montreal
King and Bay Streets,
Toronto, Canada

Mining Area


CANADA
U.S.A
LABRADOR
Hudson Bay
PROVINCE OF QUEBEC
James Bay
St. Lawrence River
ATLANTIC OCEAN
Malartic
Hygrade
Gold Mines
Mining
area of
Quebec
Quebec City
Montreal
Ottawa

To the Shareholders

Malartic
Hygrade
Gold Mines
(Canada) Ltd.

The Directors herewith submit their Annual Report for the year ending September 30, 1975, containing the most comprehensive report yet made, on the potential of the Company's principal gold property located in Malartic Township, Quebec. In view of the importance of this property and the continuing interest of major investors in its development, the Directors feel the report should be made available to all shareholders.

It was prepared by B. L. Hodge & Partners of London, England, international mining consultants, with expertise in deep gold mining operations. It is the third, of the principal documents, upon which the development plans of the Company are based. In March of 1974, the Company received an extensive report, as a result of an examination of the Camflo Mine, relative to your company's property, from its Canadian mining engineer, R. J. Isaacs. This report was the forerunner to the Hodge Report, which embraces the existing knowledge of the property, including the results of an underground survey carried out in 1973.

This underground survey of the adjacent Camflo Mine, conducted with the permission of Camflo Mines Limited, provided accurate and reliable information on the proximity of Camflo gold mining operations to the Malartic Hygrade boundary. These positions, two years ago, ranged from 8 to 70 feet on five levels at depths of from 1,950 to 2,550 feet, and have since been narrowed to the estimated positions (see diagrams) as shown in the vertical cross section diagrams reproduced again from last year's Annual Report.

The passage of the ore zone from the Camflo property on to your Company's property, led to eighteen months of intensive negotiations, initiated by Camflo Mines Limited to secure an agreement to mine across the common boundary. These negotiations were terminated by your Company in June 1974, when Camflo failed to agree to a cancellation clause to safeguard your property against the possible abuse, inherent, in the situation in which your Company would find itself.

During these negotiations, the engineers, as well as Directors, of both companies conferred on the underground situation, exchanging information which confirmed pre-existing knowledge of your Company's advantageous position, and which enabled our Canadian engineer to submit his detailed report in March 1974.

It was during these negotiations that your Company received the $1,200,000 financing, to provide working capital to carry out the potential agreement with Camflo, or, alternatively, as a preliminary financing to initiate its own plan to mine the property independently of Camflo. Details of this financing were contained in the Company's Annual Report last year. In the summer of 1974 the Hodge Report was commissioned, to include the preliminary mining feasibility study which, as shareholders will note, supports the decision of the Company's management to proceed with its own plan to develop the property.

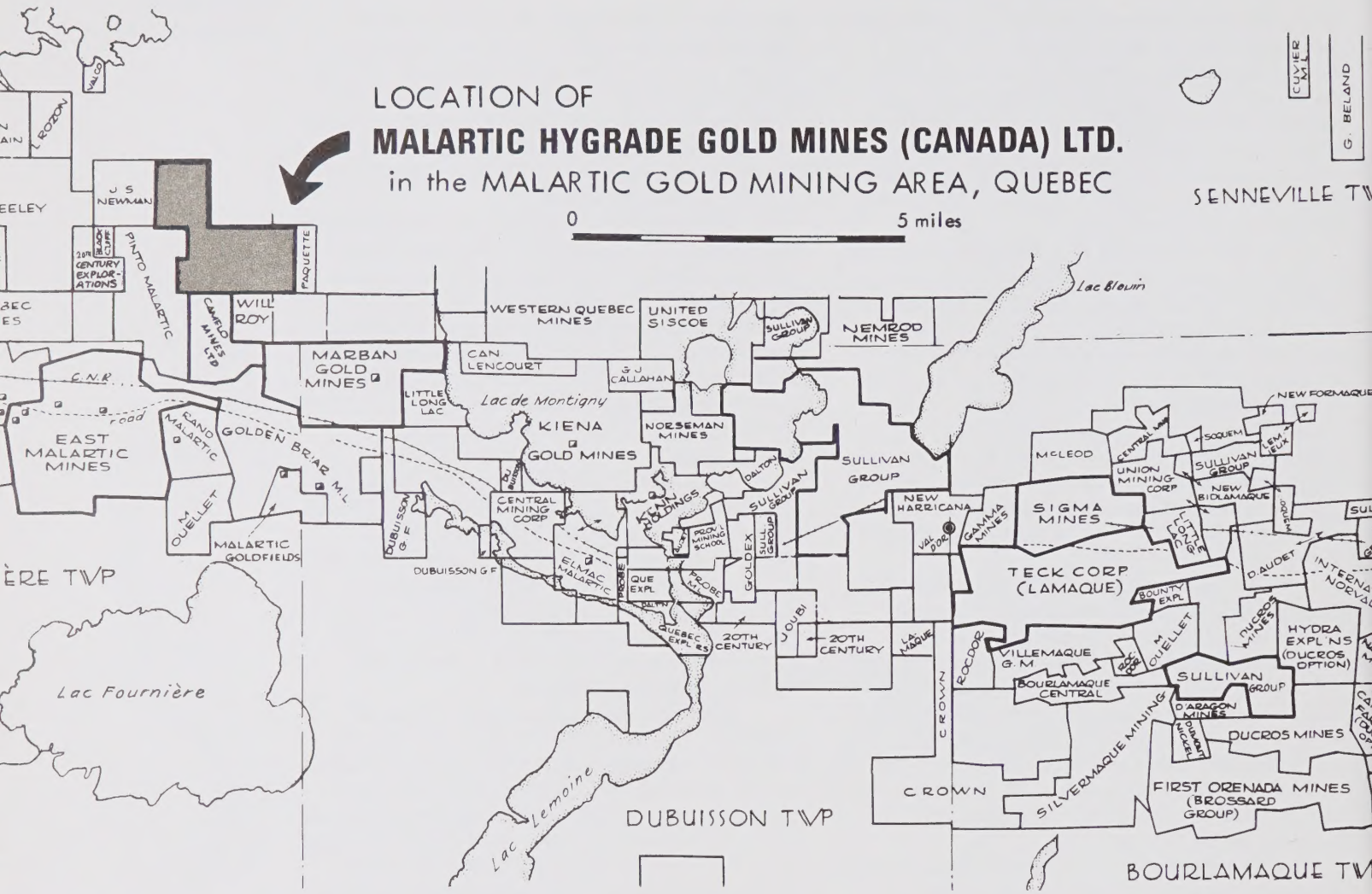
On assuming the Presidency of the Company in August 1975, I was able to confer with the engineers, during an inspection tour of the property, where surface preparation work is in progress for the siting of an exploration-development-production shaft, in accordance with the recommendations of the Hodge Report. Consideration is also being given to maximizing the use of the existing facilities on the property including a partially completed milling plant.

Your Directors are engaged in negotiations to further finance this project. One team, composed of the Canadian Directors, is engaged in such activities in Canada, and the other, composed of the European Directors, is similarly engaged in Europe; the first with the assistance of the Company's Canadian engineer, R. J. Isaacs, and the second with the assistance of B. L. Hodge and Partners in London, England.

When your Company obtained the initial financing of $1,200,000 and was in a position to initiate its own plan to mine the property, irrespective of Camflo Mines Limited, it came under considerable pressure which was not entirely unexpected, having regard to our control of this strategic ore body. Several officials of the Quebec Securities Commission attempted unsuccessfully to block this financing, the completion of which not only enhanced the Company's bargaining position with Camflo, but has now also given us a significant measure of independence. A confrontation developed with Quebec officials which led to their suspension of the public trading in the Company's shares in Quebec and to litigation in the Quebec courts, which litigation is still in progress.

In the face of this unwarranted attack by Quebec officials, whose actions have benefitted no-one except Camflo Mines Limited, a special General Meeting of Malartic Hygrade shareholders, was held in February 1975, at which shareholders, including Quebec shareholders, upon the recommendation of Directors, unanimously decided to move the Company's corporate affairs to the Province of Ontario and consequently the executive offices from Montreal to Toronto. The effect of this was to bring the Company under the jurisdiction of Ontario law and into a jurisdiction where

Location



the Company's shares have been and are legally free to trade. This change involving the formation of your new Company, Malartic Hygrade Gold Mines (Canada) Limited, does not effect the interests of the Company, its holdings, or you its shareholders. The Company's control of its Quebec properties was not affected by this change of jurisdiction.

Your new Company commenced business in Ontario on March 1, 1975, and, following a period of confusion, a Hearing was held before the Ontario Securities Commission on September 30, 1975, at which the Commission reaffirmed the legal right of the Company's (your) shares to trade in the free market in Ontario, the leading investment and financial community in Canada.

During the year, the Directors received with regret, the resignation of Mr. Gerard Paquette, as President, after many years of leadership and service to this Company, which he founded in 1956. His resignation, as a result of ill health, from these strenuous duties did not alter his substantial shareholding interest in this Company. The Directors, on behalf of all shareholders, would like to acknowledge, at this time, not only his efforts in bringing this Company to its present stage of development, but also his contribution to the Canadian mining industry as a prospector and mine-finder.

On Behalf of
the Board of Directors,

J. S. BELTON, President

MINING FEASIBILITY STUDY

BY

B. L. HODGE AND PARTNERS
14 BOLTON STREET
LONDON, ENGLAND

OCTOBER, 1974

Preliminary Mining Feasibility Study of the Malartic Hygrade Gold Mines (Canada) Limited Property, Malartic Township, Quebec, Canada

1. INTRODUCTION AND TERMS OF REFERENCE

During the period from 26th May to 1st June 1974 Dr. B. L. Hodge visited Canada as personal technical adviser to Lord Willis for the joint venture negotiations relating to the extension of mining by Camflo Mines Limited of the main porphyry orebody occurring on the Camflo property where it passes in depth on to the Malartic property. Following the rejection by Camflo of the negotiated joint venture terms, and in view of the overall circumstances surrounding the project, discussions were subsequently held with respect to the possibility of Malartic developing its own independent mining operations with particular emphasis on exploiting the main porphyry orebody in depth. Accordingly, terms of reference were agreed for a preliminary mining feasibility study relating to an independent exploitation venture by Malartic as follows:

(a) Undertake a field examination of the surface of the property in order to relate it to the configuration of the main porphyry orebody utilizing all surface and sub-surface data available, with the principal aim of siting an exploration and production shaft without preliminary diamond drilling if possible.
(b) Recommend the optimum siting and present estimated costs for an exploration and production shaft related to independent exploitation of the porphyry orebody.
(c) Provide outline recommendations relating to mining methods and costs for the independent exploitation based on the limited information available.
(d) Conduct the study in conjunction with and with the assistance of R. J. Isaacs Engineering Limited, Islington, Ontario, Canada.

2. METHODOLOGY

Prior to and during the initial visit to Canada on Malartic business with Lord Willis from 26th May to 1st June 1974, basic information relating to the company's activities and situation was obtained. This was supplemented by the collection and study of additional data, particularly from the Quebec Department of Natural Resources, in advance of the second visit to Canada for handling the Malartic business. The second visit to Canada was undertaken from 15th to 20th September 1974 inclusive, and the majority of the time was spent in the Val d'Or-Malartic area based in Val d'Or. Mr. G. Paquette, President of Malartic, was present in Val d'Or during the whole of the field visit and Mr. R. J. Isaacs of R. J. Isaacs Engineering Limited was in attendance on 16th September 1974. Investigations and activity undertaken during the visit are described briefly below.

(a) Comprehensive discussions on several pertinent aspects were held at various times with Mr. Paquette, and much of the other activity was undertaken in his company.
(b) Discussions relating to mining and related costs were conducted with Mr. Isaacs during his short site visit and these discussions were supplemented by telephone calls to Mr. Isaacs in Toronto in order to allow more comprehensive joint effort, in accordance with the terms of reference for the study.
(c) A number of detailed technical discussions were held with Mr. M. Latulippe, Resident Geologist at the Quebec Department of Natural Resources office in Val d'Or.
(d) A comprehensive examination and assessment was made of the records relating to the Malartic property held at the Val d'Or office of the Quebec Department of Natural Resources, and copies of maps, plans and publications not already to hand were obtained as far as possible.
(e) Meetings were held with two local diamond drilling contractors, J. P. Bérubé Inc. and Dominik Drilling Ltd., and competitive written quotations were obtained. Both contractors expressed reservations with respect to maintaining their quotations at current levels for any length of time because of steeply increasing costs.
(f) Meetings, including a site visit to the existing Malartic mine shaft area, were held with representatives of a local shaft-sinking contractor, Ross-Finlay Limited. As the result of this a tentative verbal quotation for sinking was provided and an undertaking was given to confirm the quotation in writing, a written quotation for shaft sinking and development driving having been received during finalization of this report. Comparative figures were also obtained through Mr. Isaacs, together with other mining costs. In addition, complementary enquiries were made through various personal contacts in Canada, the USA and the UK. In this context, it should be noted that all contractors are extremely cautious with respect to quoting any specific figures at present because of the current rapid inflation in labour and materials costs, and most prefer to work on a cost-plus basis, but allowance for this has been made in the figures quoted in the report.

(g) Site visits were made to the Malartic property, including the existing mine shaft-mill area and the section of the property some 1,500 feet to the westsouthwest of the shaft where an additional unexplored porphyry intrusion apparently occurs. During the visits to the mine shaft-mill area an examination was made of the established facilities, including the partially-built mill.

(h) Two visits were made to the mine shaft-mill area of Camflo, and a brief tour of the mill was made under the guidance of the Mine Manager, Dr. B. K. Meikle. No underground visit to the Camflo Mine was offered.

(i) Brief surface visits were made to the other operating gold mines in the Val d'Or-Malartic area and pertinent literature was collected where possible as part of a general orientation exercise. The mines concerned are East Malartic-Barnat, Marban, Goldex, Sigma and Lamaque.

Following the second visit to Canada the available documents, maps, plans and other date have been collated and assessed as the basis for this study.

3. LOCATION, TOPOGRAPHY AND VEGETATION

The Val d'Or-Malartic gold area is located in northwestern Quebec some 300 miles northwest of Montreal and 50 miles east of the Ontario border. The Malartic property, bordered immediately to the south by the Camflo and Willroy properties, is located between Malartic and Val d'Or some two miles north of provincial highway number 59 and the Canadian National Railways line between Val d'Or and Malartic. The normal access to the property is from the highway by way of a good quality dirt road which runs to the mine shaft-mill site; the same road also gives access to the Marban Mine and the former Norlartic Mine. An alternative access route runs from the Camflo Mine to join the above dirt road inside the Malartic property. Apart from the road to the existing mine shaft-mill site there is no ready access to the remainder of the Malartic property.

In common with the surrounding area, the Malartic property has a relatively monotonous low relief at a mean height of around 1,000 feet above sea level with a gentle topography ranging little more than 50-100 feet. The vegetation consists of muskeg with a relatively dense cover of tag alders, spruce, the occasional balsam, and some poplar and birch on higher ground; parts of the area are quite marshy but the extent of this apparently depends upon beaver activity.

There is a relatively widespread cover of superficial deposits consisting of glacial and post-glacial material of varying thickness covering much of the solid rocks, and, at an estimated figure of 5 per cent, exposure of the latter is not good. Combined with the relatively dense vegetation cover, this makes comprehensive economic mineral assessment of the whole area difficult with the possibility that significant occurrences may remain concealed and undiscovered. With such factors hampering prospecting, further discoveries will depend upon sophisticated geophysical surveying followed by a rigidly controlled programme of diamond drilling, or simply by the latter alone when there is already a target indicated, such as the porphyry body located some 1,500 feet westsouthwest of the existing Malartic shaft.

4. GEOLOGY

4.1. Regional

The Val d'Or-Malartic gold area is underlain by Pre-Cambrian volcanic, sub-volcanic and sedimentary rocks with each intruded by large granite batholiths and minor granitic intrusions. The general regional configuration of the various rock types is noted with the volcanic and sub-volcanic extrusive and intrusive rocks (including ultra-basics and diorites), lying to the north of the sedimentary rocks, except along the Cadillac Break which traverses the sedimentary rocks and which contains intrusive ultrabasic and granitic rocks. The regional strike of the rocks is northwest to southeast with a northeast dip of around 50 degrees, but the strike and dip are complicated by complex folding in places.

The dominant structural feature of the region is a major fault zone, known as the Cadillac Break, which essentially traverses the sediments and runs approximately parallel to the strike close to the contact zone between the sedimentary and volcanic rocks. The Break can be traced for over 200 miles from Matachewan in Ontario through the mining centres of Kirkland Lake, Larder Lake, Noranda, Cadillac, Malartic and Val d'Or. Movement along this strong fault zone has persisted over a long period of time, probably during the whole period of volcanic activity and sedimentation when the related rocks were formed, and subsequent to their formation. There is ample evidence of vertical and lateral movements along the fault zone with a large variety of intrusive dykes, sills and stocks of early ultrabasic rocks and late granitic rocks, of quartz-carbonate veins and of gold within it. The fault zone dips steeply north, and, in view of its length, it probably persists to a considerable depth below surface with most of the sub-parallel faults

and shears in the country rocks up to 10 miles north of it joining up in depth. It should also be noted, however, that there are conjugate faults and shears lying at or close to right angles to the Break.

Gold occurs at many locations along the Cadillac Break and along many of the related faults and shears, a large proportion of gold production to date in the area having been derived from such sources. As a result of this, until recently it was generally considered that the Cadillac Break and related structures were the main controlling factors involved in the formation of economic concentrations of gold, and that significant gold concentrations would not be discovered elsewhere. However, in the light of recent thinking on crustal plate tectonics related to the geology of the area, it is considered that the primary source of the gold is genetically related to the sub-volcanic siliceous intrusions feeding the last stage of volcanicity at or near the top of each volcanic phase. Gold has a marked tendency to come out of solution in or very close to its source, that is to say, in or adjacent to the sub-volcanic siliceous intrusions which consist of feldspar porphyry, monzonite porphyry, syenite porphyry and granodiorite. Thus, these present attractive exploration targets, as exemplified by the gold production from the Camflo feldspar porphyry and other locations, such as East Malartic and Lamaque whose gold production comes at least partially from such an environment. Structural deformation of the rocks, either by folding or faulting, is apparently another significant and contributory factor involved in the formation of economic concentrations of gold, and in this context the Cadillac Break and related structures, as well as folding, are of importance. The geochemical environment is also apparently important in controlling the concentration of gold in that the best deposits appear to occur where the wall rocks of various types are competent and contain significant amounts of iron, either as pyrite, pyrrhotite, chalcopyrite or magnetite; the optimum rocks in the volcanics and sub-volcanics are apparently the diorite intrusions, whilst in the sediments the iron-formations are ideal, as in the case of the Camflo porphyry where iron-formations and diorite occur in close proximity. Thus, the search for gold deposits cannot be justifiably restricted to the Cadillac Break and related structures, so that the gold potential of the area should not be regarded as confined or exhausted by any means.

4.2. **Malartic Property**

The property is completely underlain by volcanic and sub-volcanic rocks. The detail has been determined on the basis of the limited exposure of solid rock, largely controlled by the interpretation of a ground magnetometer geophysical survey covering the whole property completed in 1961, and some 175 relatively shallow diamond drill holes put down on the property and in immediately adjacent ground by the various owners since 1935; from this date the owners of the property in whole or in part have successively been Ascot Gold Mines, Malartic River Mines, Hugh Malartic Mines, Citralam Malartic Mines, Lavandin Mining Company, Malartic Hygrade Gold Mines and Malartic Hygrade Gold Mines (Quebec). An experimental ground electromagnetic survey carried out during 1973 over part of the property using a Ronka EM-16 instrument did not produce any significant data.

In view of the importance to this study of the Camflo porphyry orebody, consideration must also be given to the geology of the Camflo and Willroy properties where they border the Malartic property on its southern margin. Basically, the junction between the sedimentary rocks to the south and the volcanic and sub-volcanic rocks to the north traverses the Camflo property in a northwest to southeast direction. The Temiscamian-type sedimentary rocks of the area comprising part of the Pontiac Group are mainly fine-grained graywackes, which, adjacent to the volcanic rocks, contain a 25 feet thick bed of altered conglomerate followed by a 50 feet thick magnetite iron-formation band and a further 10 feet thick iron-formation band separated from the first by some 300 feet of graywacke. In common with the regional pattern, the sedimentary rocks strike northwest to southeast and dip steeply northeast but the structure is complicated by folding with some faulting and shearing. The Keewatin-type volcanic rocks of the Malartic Group are principally andesite lava flows (now considered to be basalt flows), ultrabasic lava flows (formerly considered as intrusive peridotites) and tuffs, which are cut by sub-volcanic dyke, sill and stock-type intrusions consisting variously of diorite (now considered to be gabbro), granodiorite, feldspar porphyry, syenite porphyry and monzonite porphyry. The overall regional northwest to southeast strike and northeast dip of the volcanic and sub-volcanic rocks are contorted over much of the area by a major drag fold structure which is approximately Z-shaped in plan. There are also various fault and other shear zones, mainly with conjugate northwest and northeast trends, cutting the volcanic and sub-volcanic rocks.

Several intersections of gold have been made in various boreholes in different geological situations on the property and in the adjacent area. On the basis of present knowledge, most of these gold occurrences appear to be isolated lenses or disseminations of limited dimensions and grade, but they should not be overlooked for the future

because some at least could well merit further investigation by intensive diamond drilling. The most important known occurrence of gold is in the intrusive feldspar porphyry located on the Camflo property, and the main purpose of this study is to demonstrate that the porphyry does pass on to the Malartic property in depth, and to make recommendations concerning the possibility of Malartic developing its own independent mining operations principally based on this porphyry orebody. Since in the course of the study it has become obvious that reasonably significant vein gold occurrences and an unexplored porphyry intrusion occur on the Malartic property in proximity to the in-depth projection of the Camflo porphyry, cognizance must be given to these factors in making any recommendations. The Camflo porphyry, the vein gold occurrences and the unexplored Malartic porphyry are considered in more detail in the following section, together with a brief consideration of the potential of the diorite intrusions.

5. ACTUAL AND POTENTIAL OREBODIES

5.1. **Camflo Porphyry**

5.1.1. Setting and Configuration. — The porphyry body, which is locally-termed feldspar porphyry, but which is actually a porphyritic syenite/monzonite stock, is intruded into the sedimentary rocks of the Pontiac Group close to the junction with the volcanic rocks of the Malartic Group. The oval pipe-like stock, which does vary in shape but in plan averages 250-300 feet wide in a northnorthwest direction and 550-600 feet long in an eastnortheast direction, is located at the nose of and follows the northeast plunge downwards of a large anticline roughly maintaining a positive between the two bands of iron-formation referred to in section 4.2. It was previously believed that the porphyry did not outcrop at surface, and that it terminated at a depth of around 350 feet below the level of the Camflo shaft collar (all quoted depths are related to this datum in the text), but Dr. Meikle has advised (personal communication) that the porphyry has been located at surface to the southwest of the mine beneath a cover of superficial deposits. To the northeast of the porphyry body, with the 50 feet thick iron-formation and the 25 feet thick altered conglomerate referred to in section 4.2. separating it from the porphyry, there is at the base of the volcanic and sub-volcanic rocks an intrusive diorite sill which Camflo has reported contains significant amounts of gold ore in places. There is also a strong northwest trending shear zone immediately to the southwest of the porphyry which Camflo has indicated contains some ore where it crosses the sedimentary rocks near the porphyry. This situation is found at the 600 feet level.

On the basis of available information, the average direction of dip of the stock is north 55 degrees east at an average dip angle of 55 degrees; this information has been gleaned from various sources, including Camflo Annual Reports, data gained from the visits made by Mr. Paquette and Mr. Isaacs to the Camflo operations during January and February 1974, and from a publication in the December 1970 Canadian Mining and Metallurgical Bulletin by Dr. Meikle, the current Camflo Mine Manager, in which it is stated that the stock 'rakes downward at 55 degrees along a strike of north 55 degrees east''. It is already known and accepted by all that the stock passes from the Camflo property on to the Malartic property in depth, but there are differences of opinion as to what level the passage takes place. In the light of all the available information it now appears that the passage commences at a depth below the Camflo shaft collar of between 2,300 and 2,400 feet, and it can be reasonably extrapolated by projection that the stock passes completely on to the Malartic property at no greater depth than between 2,900 and 3,000 feet depth, and possibly even higher, although the latter cannot be predicted precisely because the dip of the stock is unlikely to be absolutely regular. It appears certain, however, that Camflo accepts that on its 2,400 feet level the hanging-wall of the ore-bearing section of the porphyry body extends up to 70 feet north of the boundary into the Malartic property because this has been seen by Mr. Isaacs on the relevant mine level plan during a visit to the Camflo Mine office. Furthermore, the fact that Camflo has worked extremely close to the common property boundary in the lower levels of the mine is clearly indicative of the passage; the results summarized in Table 1 of a recent underground survey carried out on behalf of Malartic emphasize this point.

5.1.2. Composition, Gold Content and Distribution. — Within the porphyry stock there are numerous large highly irregular inclusions of sedimentary rocks and the pale pink to grey-coloured porphyry itself consists of 0.25 inch rounded feldspar crystals which comprise about two-thirds of the rock in a groundmass of fine-grained feldspar and biotite. Much of the porphyry is highly fractured, but individual fractures are very irregular, with only one persistent set in a northnortheast direction normal to the long dimension of the stock. Approximately 25 per cent of the porphyry is ore with the remainder almost barren. Except where it is particularly rich the ore appears visually to be almost identical to the barren porphyry. The richer ore zones within the porphyry contain 2-3 per cent

white-grey quartz stringers up to 1 inch wide and about 1 per cent disseminated pyrite (iron sulphide, often known as "fool's gold", but which may contain some gold itself), with up to 0.5 inch subhedral pyrite crystals in the quartz stringers.The lower grade ore and much of the completely barren porphyry contains only 0.5-1 per cent quartz stringers and 0.5-1 per cent pyrite. Thus, quartz stringers permeate the entire ore zone, but porphyry containing no quartz stringers and no pyrite is generally uniformly barren. Even when significant values are present the gold may not be readily visible, but small specks of visible gold are common in the quartz stringers and they are present along minor fractures in the porphyry in zones completely separated from the stringers, whilst visible gold is also often present on the face of the pyrite crystals. There are also present minor amounts of scheelite (a tungsten mineral, calcium tungstate) and rarely tellurides (tellurium, usually combined with gold, silver and other metallic elements), but only with the higher grade ore; calcite (calcium carbonate) and fluorite (calcium fluoride) are also common in small amounts, both in the ore and in the barren porphyry. Individual ore zones within the porphyry occurs as highly irregular lenses, fingers and disseminations varying in grade and size with no regular or predictable distribution. Exceptionally the zones are as wide as 130 feet and 400 feet long by 400 feet deep, with the higher grade ore reaching up to an average of 0.75 ounces of gold per ton. The combination of the problem of visually differentiating between barren porphyry and ore, together with the irregular and unpredictable distribution and grade of the ore, renders initial exploration and subsequent development and exploitation of the porphyry difficult. Such problems have apparently been effectively overcome by Camflo for their mine by devising and implementing a meticulously controlled system of detailed underground diamond drilling, exploration drifting and sampling ahead of mining, with the appropriate mining method adopted within an established pattern in a flexible manner on the basis of the findings for any particular zone of ore in the porphyry.

5.1.3. **Ore Production and Reserves.** — From the commencement of commercial output in May 1965 to the end of 1973 the Camflo Mine has reportedly produced 3,073,615 tons of ore with an average recovered grade of 0.251 ounces of gold per ton for a total production of 771,405 ounces of gold which is now at a rate of around 100,000 ounces per annum. The Camflo Mine ranks as one of the ten largest gold producers in Canada, and Canada is the second largest Western World producer with a 1973 estimated output of 2 million ounces, as compared with South Africa's estimated output of 27.8 million ounces. In Canada, lode gold mines accounted for 70 per cent of the total gold production in 1973 with by-product gold from base metal mining accounting for 29.8 per cent and placer mining 0.2 per cent. The position of the Camflo Mine amongst the principal lode gold producers is shown in Table 2.

It is understood that some 3,063,000 tons of the Camflo ore has come from between the 350 and 2,100 feet levels of the mine with the remaining small amount from between the 2,100 feet level and the lowest production level of the mine which is at a depth of 2,550 feet, although the main shaft currently extends to a depth of 2,750 feet with plans announced by Camflo to sink to a depth of 3,350 feet commencing during September 1974. Apparently, there is no known ore in the porphyry above the 350 feet level and the main ore-bearing porphyry occurs below the 450 feet level.

It is believed that virtually the whole tonnage of ore produced to date has come from the porphyry body, although in recent times Camflo has given much prominence to the development during 1973 and 1974 of several new diorite orebodies (within the diorite lying to the northeast of the porphyry referred to in section 5.1.1.) between the 1,500 and 2,400 feet levels, with long drifts to the east of the porphyry ore body driven on the 1,100, 1,300, 1,500, 1,650, 1,800, 2,100, 2,250 and 2,400 feet levels, and one diorite stope started on the 1,650 feet level and another on the 2,100 feet level. In the 1972 Camflo Annual Report the grade of the diorite ore is given as 0.17 ounces of gold per ton along a drift over a 10 feet width for a length of 500 feet on the 2,250 feet level, whilst in the 1973 Annual Report the grade of the new diorite ore outlined to date in several orebodies is quoted as 0.20 ounces of gold per ton with the proviso given that there had been a marked increase in the grade of the diorite ore with depth and that the prospects for finding additional higher grade ore on the deeper levels appeared excellent; some support to the latter observation is given in the Camflo Quarterly Report for the three months to 31st March 1974 in which reference is made to the development sub-drift above the 2,100 feet level having outlined 110 feet of diorite ore averaging 0.36 ounces of gold per ton over an 8 feet width. No specifically quantified tonnage figures have been revealed for the amount of diorite ore proved, although in the 1973 Camflo Annual Report it is inferred that the 1973 total proven and indicated ore reserves of 2,631,350 tons at a recoverable grade of 0.22 ounces of gold per ton include some diorite ore because the change in reserves from the 1972 figure of 2,247,000 tons at a recoverable grade of 0.231 ounces of gold per ton is explained

by the inclusion of some low grade porphyry ore and the diorite ore which is profitable to mine at the higher price of gold. Thus, it is impossible to assess or quantify adequately the status of the diorite ore. The diorite still strikes in a southeast direction towards the Willroy property, which is under option to Camflo, thus laterally extending the potential for Camflo at least in the upper levels. However, it should be noted that the gold-bearing sill lies to the northeast of the porphyry body and it has a northeast dip; therefore, it is also likely to pass on to the Malartic property in depth in a similar manner to the porphyry body.

An analysis of the statistics that it has proved possible to obtain from Camflo indicates that between the 450 and 2,100 feet levels the porphyry body yields (ore mined and still in place) an average of 2,408 tons of ore per vertical foot at an uncut grade of 0.261 ounces of gold per ton (the 0.251 ounces of gold per ton quoted above is the average recovered grade after milling of the mined ore). The vertical variation in the volume and grade of the porphyry ore on the Camflo property is summarized in Table 3. This table demonstrates that there is a considerable degree of vertical variation in the ore content of the porphyry body, which is attributable to the irregular distribution of the ore described in section 5.1.2. The variation is most marked in the tonnage per vertical foot, probably due to vertical variations in the shape and size of the porphyry body itself as well as to variations in the local extent and distribution of the mineralization. It is interesting to note, however, that variation in the grade of ore is not particularly marked and that the richest grade is at the lowest level recorded from 1,950 to 2,100 feet, although the volume of ore per vertical foot is the lowest in this section. The latter could be explained by the whole porphyry body being rather narrow with narrow ore zones at this point, and there is some evidence available to support this. Furthermore, it should be noted that in the 1,800 to 1,950 feet level section immediately above the lowest level for which records are available, the low tonnage per vertical foot is compensated by a very high tonnage.

Although there is some indication from Table 3 that there may be an increase in grade in depth, the Camflo ore production figures for 1973 summarized in Table 4 do not confirm this. The 1973 figures are not considered to be critical, however, in view of the fact that Camflo reportedly worked lower grade ore quite deliberately during 1973 because the higher gold price made it economic to do so, and perhaps it was also necessary to work such ore to attain the required tonnage for milling and for development purposes, particularly in the lower levels which are just being opened up.

In his March 1974 report, Mr. Isaacs presents figures of porphyry ore remaining in place to the 4,000 feet level with a distribution between the Camflo and Malartic properties, the figures being a straight acceptance of those provided by Dr. Meikle with no critical appraisal, although in discussion Mr. Isaacs has subsequently expressed some scepticism towards the stated tonnages remaining on the Camflo property. The figures are repeated in Table 5A, from which it will be noted that the tonnage of ore per vertical foot has been reduced from 2,408 tons to 2,300 tons below the 2,100 feet level as a contingency allowance. The 910,200 tons of ore claimed as remaining in the porphyry body above the 2,100 feet level appears rather high when the 3,063,000 tons of ore reportedly extracted from above the level is related to what is known from published sections of the worked-out area and that area remaining to be worked, especially when it is recognized that only some 25 per cent of the porphyry body is ore. Furthermore, the ground between the 450 and 2,100 feet levels has already been extensively mined and it is often difficult and costly to re-enter previously-mined areas. Nevertheless, the Camflo figure cannot be really disputed in the absence of critical evidence, although the grade of the material is not known and it is reasonable to assume that it would have been worked at the time the relevant section of porphyry was opened up if the grade had been reasonably high. Consideration of this matter relating to the reserves of porphyry ore remaining on the Camflo property is not really pertinent to the current study, however, except in so far as it affects the potential ore reserves on the Malartic property. Nevertheless, it is of interest to note that if Camflo estimates that it has 2,310,200 tons of porphyry ore remaining on its property, it may be reasonably inferred that the company's latest published ore reserves figure of 2,631,350 tons referred to above must include 321,150 tons of diorite ore.

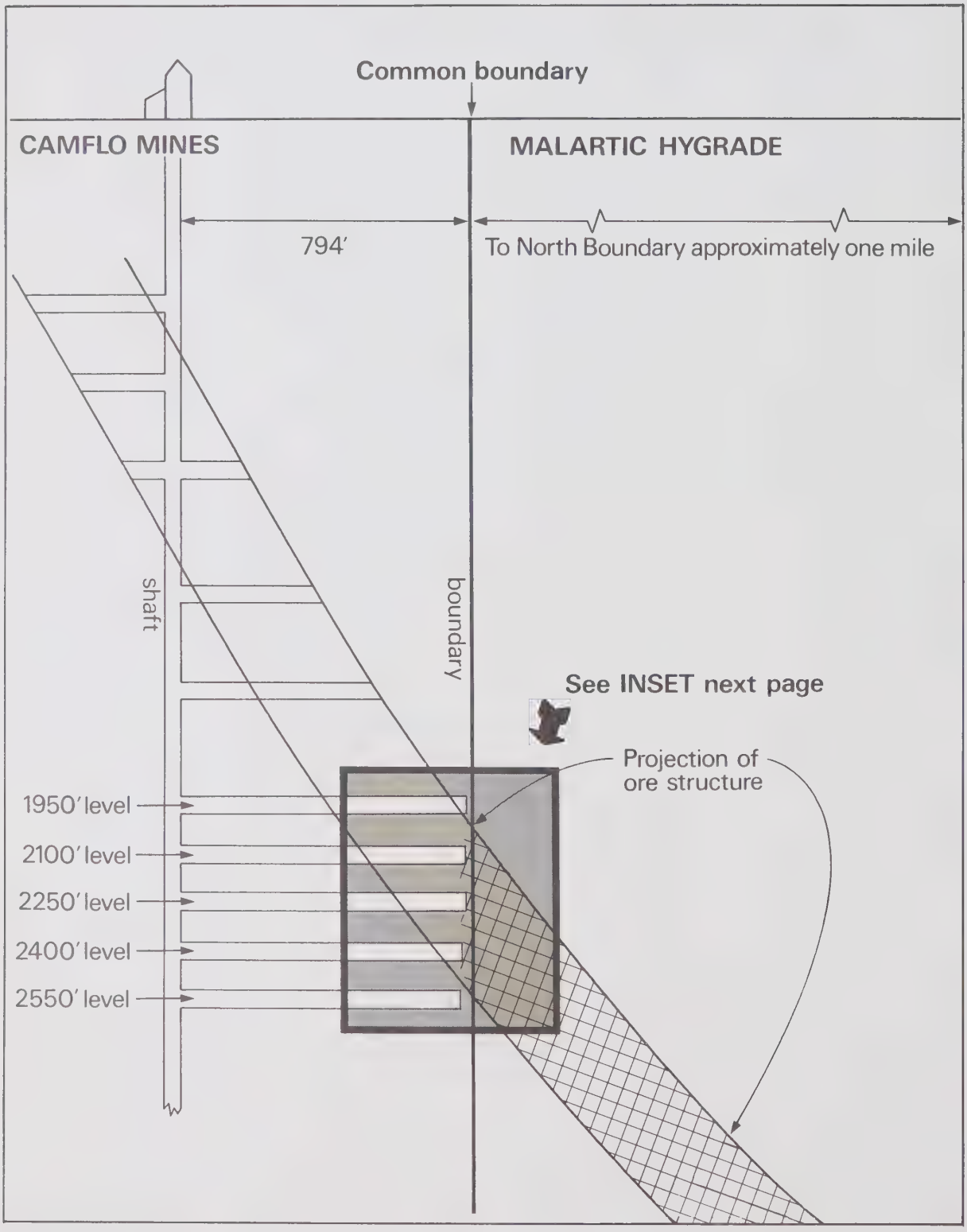
5.1.4. **Malartic Extension.** — It has already been demonstrated in section 5.1.1. that the porphyry body passes in depth from the Camflo property on to the Malartic property and that this passage probably commences at a depth of between 2,300 and 2,400 feet with the passage being complete at a depth of between 2,900 and 3,000 feet.

Estimates of the distribution of porphyry ore in the boundary zone and beyond are presented in Tables 5A and 5B, with Table 5A consisting of the Camflo estimates and Table 5B containing the estimates arived at as a result of this study. The basic difference in the estimates down to 3,200 feet lies in the distribution of reserves between 2,600 and 3,200 feet. No sound reason can be found for

(Cont'd on page 16)

Vertical Cross Section

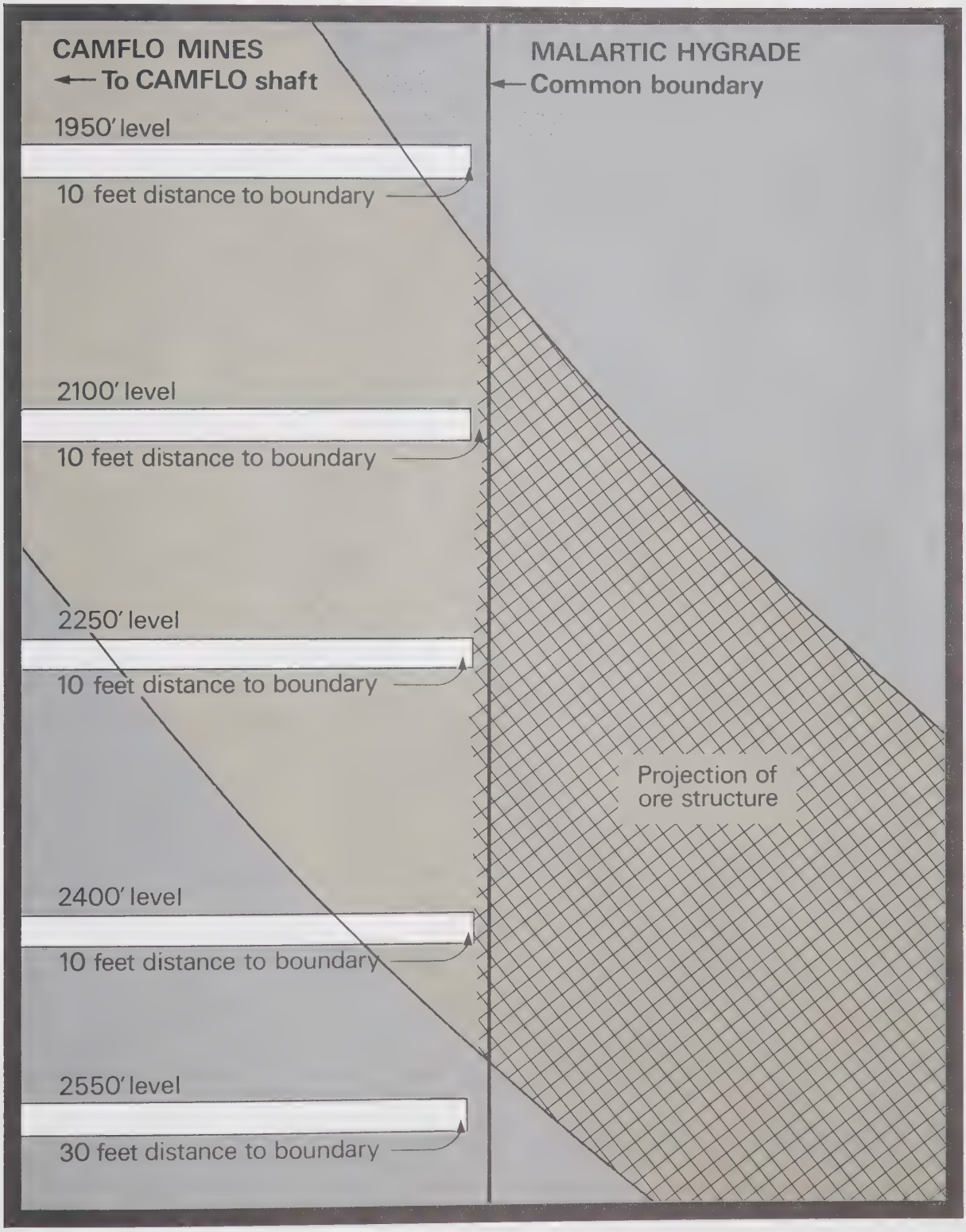
(Reproduced from the 1974 Annual Report and compiled by the Management of the Company based on information obtained by surveys and on other available data.)

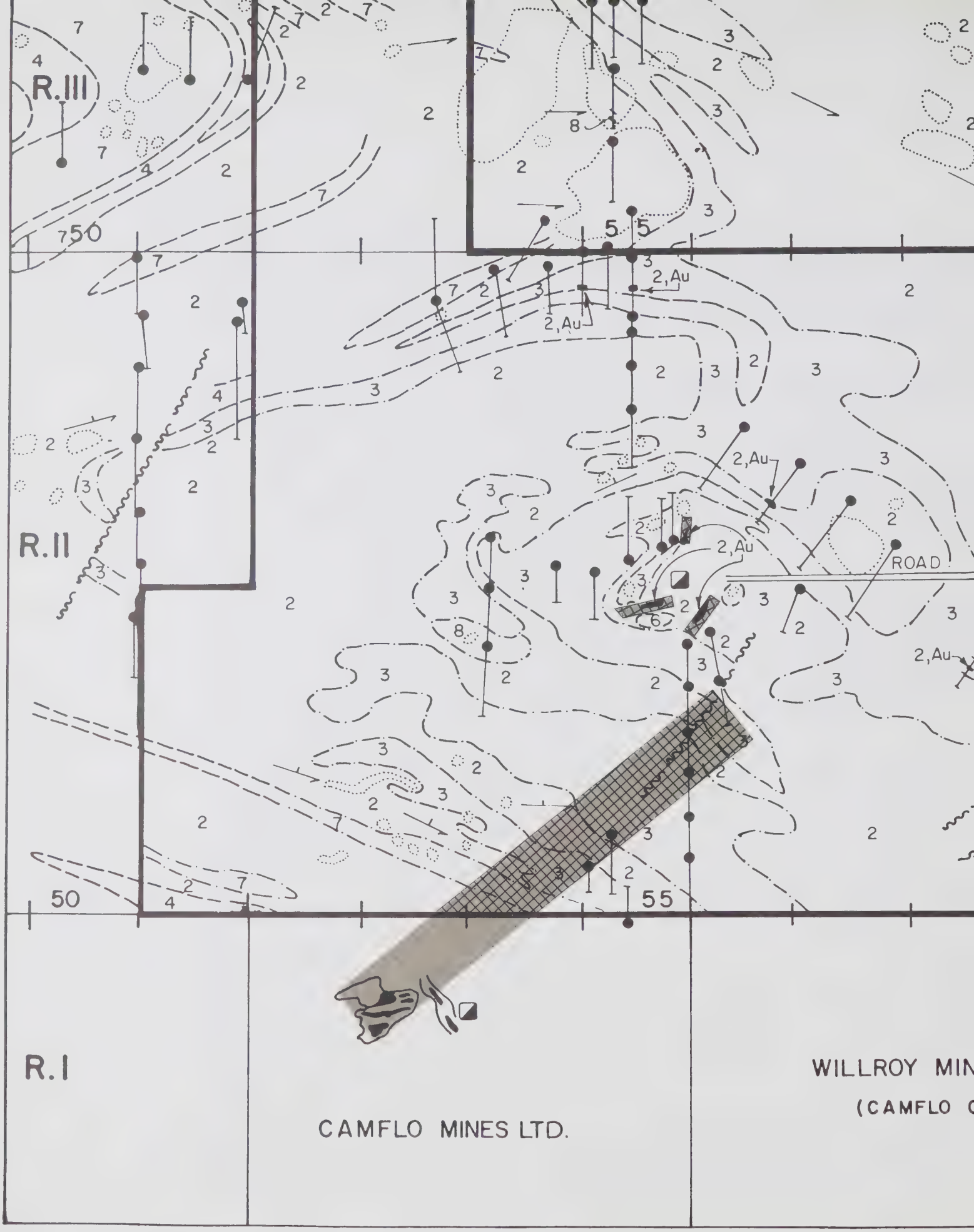


Inset-Vertical Cross Section

(Reproduced from the 1974 Annual Report and compiled by the Management of the Company based on information obtained by surveys and on other available data.)

Malartic
Hygrade
Gold Mines
(Canada) Ltd.




R.III
R.II
R.I
750
50
55
5 5
2,Au
ROAD
CAMFLO MINES LTD.
WILLROY MIN
(CAMFLO

(Reproduced from the 1974 Annual Report and compiled by the Management of the Company based on information obtained by surveys and on other available data.)

LTD.
)

Geological Map

Malartic
Hygrade
Gold Mines
(Canada) Ltd.
and
adjacent properties
in Malartic Township,
Quebec.

3000 2000 1000 0
SCALE IN FEET

Scale in feet
Date: September 1974

Legend

2. Volcanic Flows — Andesite
3. Volcanic Flows Ultra Basic
4. Tuffs
5. Syenite
6. Granodiorite
7. Diorite
8. Feldspar Porphyry
9. Sediments

Shear or Fault Zone
Projected Gold Zone
Gold Zone
Shaft
Drill Hole
Au Commercial Grade Gold Values

Information based on data from Mining Companies and Government Publications.

the high proportion of ore allocated by Camflo to their section of the porphyry body in this zone, although the possibility cannot be completely ruled out of underground diamond drilling having been carried out by Camflo to prove the claimed distribution. Certainly the evidence to hand does not support such a distribution, although Camflo must have some reason for announcing plans to deepen its shaft from 2,750 to 3,350 feet and to expand its mill capacity from 1,000 to 1,250 tons of ore per day. With respect to these plans, it is pertinent to mention that the proposed shaft deepening, scheduled to commence in September 1974, had not been commenced at the time of the visit in mid-September, according to Dr. Meikle, and there was no apparent activity on the mill extension, scheduled for completion in early 1975, with only a start having been made on the foundations. In the circumstances it would not be unreasonable to construe that the expansion and development plans were made by Camflo in anticipation of reaching a joint venture agreement with Malartic for exploitation of the Malartic section of the porphyry body, and perhaps even to place some pressure on Malartic to reach an agreement, with the apparent expansion and development plan delays being attributable at least partially to the recent failure to reach agreement.

It must be emphasized that the estimated tonnages of porphyry ore on the Malartic property quoted in Table 5B cannot be regarded as proved without a comprehensive diamond drilling programme either from surface or from underground using the Camflo workings for access. However, it is reasonable to assume that the porphyry body does continue for some distance on to the Malartic property, particularly in the common boundary zone down to a depth of at least 3,500 feet, especially as the porphyry body has already been proved to extend over a vertical depth of more than 2,500 feet and similar porphyry bodies are reported to persist to at least 6,000 feet depth in the adjacent area. Thus, no really satisfactory quantified estimate of in-depth ore reserves on the Malartic property can be quoted because it is impossible to guarantee that the porphyry body will persist in depth for any distance with the 2,300 tons of ore per vertical foot, but the figures in Table 5B are clearly indicative of the potential and the considerable tonnage down to 3,500 feet can at least be considered as possible ore reserves. What is more intangible than the potential tonnage of ore is the grade and distribution of the ore within the porphyry body because it has already been demonstrated that this is irregular and unpredictable. No specific information is available with respect to such matters for the Malartic property, although Mr. Paquette has advised that he understands Camflo to have unofficially drilled at least one hole into the porphyry ore on the Malartic property which reportedly yielded an intersection of 0.41 ounces of gold per ton over an unspecified length at an undefined point. Based on a highly assumptive extrapolation using the ore tonnages quoted in Table 5B and applying the average recovered grade of 0.251 ounces of gold per ton of ore attained for the 3,073,615 tons of Camflo ore milled to date, the Malartic porphyry ore could contain 545,172 ounces of gold to a depth of 3,500 feet, 833,822 ounces to a depth of 4,000 feet and 1,988,422 ounces to a depth of 6,000 feet. Again it must be strongly emphasized that these figures are only an indication of potential and not proved, although the overall situation is certainly favourable. Proof of the potential would depend upon deep diamond drilling or the sinking of an exploration/development shaft to examine the porphyry body in place.

5.2. **Vein Gold Occurrences**

Significant vein orebodies occur on the Malartic property in the core of the Z-shaped drag fold structure described in section 4.2., with the locations in the vicinity of the existing Malartic shaft. There are three main veins or vein zones which occur in the andesitic and ultrabasic lava flows in the core of the drag fold with diorite intrusions intimately associated in two cases. The orebodies are small but of exceptionally high grade and they comprise gold-bearing quartz veins filling large fractures in the volcanic and sub-volcanic rocks. It was these orebodies, or at least some of them, which the existing Malartic Mine exploited for a period. Contemporary detailed company reports by Dr. W. N. Ingham, dated 11th January 1961, and Mr. G. H. Dumont, dated 25th January 1962, already exist concerning the exploration and assessment of these deposits. Consequently, it is only proposed to deal with them briefly below for present purposes, although it would appear that further exploration and assessment is essential at least in some cases, both laterally and in depth, because exploration to date has only been to relatively superficial depths.

5.2.1. **Number 1 Vein.** — This vein, known as the Ascot Vein, is located some 360 feet southeast of the Malartic shaft in andesite, with a potential subparallel gold-bearing vein indicated 120 feet further southeast. The main vein strikes north 25 degrees east and dips almost vertically. It contains white to bluish sugary quartz and is sparsely mineralized with pyrite and chalcopyrite (copper iron sulphide). Although the discontinuous structure is more extensive, pinching and swelling in width along its length, Dr. Ingham advised that drilling and surface

observations of old trenching indicated a gold oreshoot 150 feet in length extending from surface to a depth of 250 feet, up to 3.2 feet wide, containing 12,000 tons of ore at a cut grade of 0.40 ounces of gold per ton, or 4,800 ounces of gold. Some mining of this vein was apparently undertaken from the 450 feet deep Malartic shaft, but no production figures are to hand.

5.2.2. Number 2 Vein Zone. — This structurally complex vein zone lies some 140-180 feet south and southwest of the Malartic shaft and contains at least seven sub-parallel components striking approximately east to west for a composite distance of some 500 feet over a north to south width of some 200 feet in andesitic and ultrabasic lavas with a small diorite intrusion associated. There are two main veins lying 10-30 feet apart, designated 2A and 2B, located in the northern part of the zone in andesite. These two main veins strike east to west, dipping approximately 65 degrees north, and there is reasonably close association with a feldspar porphyry dyke to the north. Two further relatively low grade veins, designated 2C and 2D, lie close and subparallel to the south of the 2A and 2B veins in andesite, with three further reasonably high grade short veins, designated 2E, 2F and 2G, located 60-130 feet south of the 2D structure within the diorite intrusion. The ore proved in this zone is in 120 feet strike lengths to a depth of 400 feet in the 2A and 2B veins at 7 feet and 8.5 feet average widths respectively, the total ore calculated as proved by Dr. Ingham amounting to 74,800 tons at an average cut grade of 0.75 ounces of gold per ton, or 56,100 ounces of gold. It was the mining of this zone that was concentrated on from the 450 feet deep Malartic shaft at three levels, but no production figures are to hand.

5.2.3. Number 3 Vein Zone. — This zone lies some 260 feet north of the Malartic shaft in andesitic and ultrabasic lavas with a small diorite intrusion intimately associated and feldspar porphyry dykes in close proximity to the south. Three sub-parallel veins with a northeast to southwest strike of at least 250 feet extend over a width of some 50 feet and they cut the lavas and diorite. Exploration of the veins has indicated high and low grade intersections ranging from 0.07 to 2.16 ounces of gold per ton, but sufficient exploration work has not been carried out to allow the definition of oreshoots on the structures.

5.3. Malartic Porphyry

A small intrusive feldspar porphyry body located some 1,500 feet westsouthwest of the Malartic shaft is mapped with an 850 feet westnorthwest to eastsoutheast length and a 300 feet northnortheast to southsouthwest width. This porphyry body is located at the nose of the Z-shaped drag fold. There is apparently a small outcrop of the porphyry and rapid checking in the field during the site visit certainly revealed the presence of large angular blocks of porphyry in the relevant area. The porphyry is similar in character to the Camflo porphyry but samples of the blocks contain no visible gold. This is not surprising because the Camflo porphyry contains no gold above the 350 feet level, possibly due to superficial leaching. Furthermore, the gold is frequently not visible even if present. No concentrated effort has been made on exploring this porphyry by diamond drilling and sampling, although two boreholes (numbers 56 and 57) drilled in the late 1950's or early 1960's by Lavandin Mining clearly intersected the porphyry but the borehole records have not been made available for examination to date (only the borehole sequence of Lavandin Mining up to number 50 is to hand). In view of the gold-bearing potential of the porphyry intrusions, a concentrated exploration programme on this porphyry body would appear to be desirable, although if this is undertaken it should be remembered that initial discouraging results should not be allowed to permit premature abandonment of the programme because when the Camflo porphyry was first intersected by diamond drilling it was apparently barren due to the irregular distribution of the ore within it.

5.4. Diorite Intrusions

More detailed assessment of the gold potential of the diorite intrusions appears to be warranted in view of the apparent geological favourability of the diorite as a gold-bearing host rock, which is supported by the reported Camflo findings and the occurrence of gold associated with diorite on the Malartic property, particularly in the area adjacent to the Malartic shaft and at other locations in borehole intersections. Diorite intrusions which appear to present obvious targets in the particular context of this study, because of their proximity to the other potential ore producers, are those adjacent to the Malartic-Camflo boundary. The in-depth projection on to the Malartic property of the Camflo gold-bearing diorite must also be kept in mind even though some scepticism has been expressed with respect to the extent of its contribution to the overall Camflo ore reserves.

6. EXPLORATION AND EXPLOITATION

6.1. Integrated Programme

The initial principal aim of this study was to make recommendations for the siting of any exploration and production shaft, preferably without preliminary diamond drilling, in order to allow the independent exploitation by Malartic of the Camflo porphyry where it passes on to the Malartic property in depth. However, it will be obvious from section 5. that an examination of all the factors has revealed that the optimum exploitation of the Malartic property, even in the limited specified area of interest involving the in-depth extension of the Camflo porphyry, requires several other factors to be taken into consideration before proceeding on a unilateral course because of locations with considerable gold production potential being situated in close proximity to the porphyry extension. The logic of this position is that, in accordance with the best mineral exploration and mining practice, it would be unwise to establish expensive mining and milling facilities at a location which could have been more ideally situated by adequately exploring and assessing the whole situation in advance. In particular, this would involve decisions on the optimum siting of the main access shaft with the implications relating to lengths of underground haulage and related operating costs. Consequently, it is recommended that the other possibilities in the relatively restricted vicinity of the Camflo porphyry extension indicated in section 5. should be explored and assessed fully before any further action is taken so that an integrated exploitation programme can be proceeded with eventually. Recommendations for and the formulation of such an exploration programme, which would involve detailed field mapping, geophysics and diamond drilling, would require a further site visit when picket lines have been cut through the bush because such access and location facilities were not available during the recent site visit. Furthermore, a collation and detailed study of all previous diamond drilling and technical data would be required beforehand.

6.2. Porphyry Extension

The possibility still exists of undertaking a programme concentrating solely on independent exploration and exploitation of the Camflo porphyry extension on the Malartic property. Although the position of the porphyry can be approximately projected in depth, as demonstrated in section 5., it must be remembered that the precise configuration cannot be fixed on the basis of existing information, and the content and grade of ore in the porphyry can certainly not be definitely predicted with total confidence. Consequently, the optimum situation would be to obtain information about the porphyry by exploration ahead of exploitation.

The required information could only be obtained by diamond drilling and the optimum site for undertaking this would be the underground workings of the Camflo Mine, both from the point of view of cost and the logistics of drilling from the known position of the porphyry body to intersect the same relatively small target in which the gold-bearing ore is irregularly distributed. In order to obtain the required information to a reasonable depth on which to base plans for further exploitation, it is recommended that 1,000 feet long boreholes would be required and at present quoted rates the basic cost of each of these would be some $4,600. Thus, the basic cost of a programme of 10 underground boreholes involving 10,000 feet of drilling would be $46,000. This drilling, which should provide sufficient hard data with respect to the continuation of ore-bearing porphyry for embarking upon exploitation in depth, could be distributed in boreholes of different lengths according to requirements as the drilling programme proceeded. In this context, it is recognized that problems exist in making arrangements for underground drilling from the Camflo workings, but the figures are presented for comparison with those below.

The other alternative to obtain information is to drill from surface, but such drilling would be expensive and unpredictable because drilling to hit a target with maximum plan dimensions of 300 feet by 600 feet at the required minimum depth of 3,000-3,500 feet would be difficult due to the deviation problems encountered in drilling such long holes. Furthermore, even if the deviation problems were overcome, as is possible by meticulous control, and intersections with the porphyry were made, the irregular distribution of the gold-bearing ore in the porphyry could result in misleading information being obtained; however, by drilling deviation holes from the same main hole, this problem could probably be overcome to some extent, and there could be some cost advantage in drilling deviation holes by wedging at depth from a single hole. The basic cost of drilling each 3,500 feet deep diamond drill hole from surface would be some $35,590 at present quoted rates, and it is estimated that a minimum of 10 boreholes would be required at a total basic cost if $335,900; considerable escalation in this cost might be expected due to on-cost charges resulting from problems encountered in drilling such deep holes and the eventual cost could amount to $400,000 to $450,000. The amount of useful information to be gained from such deep diamond drilling is in some doubt, particularly when it is recognized that at least some of the holes may be drilled without

intersecting the porphyry at all; in these circumstances down-the-hole geophysics could probably assist in the matter, together with deviation drilling from the same hole. Nevertheless, the cost and potential problems related to such a programme warrant serious consideration of simply embarking upon the sinking of a vertical exploration shaft of sufficient size to allow its use for subsequent exploitation. Underground access by way of such a shaft would certainly allow full assessment of the orebody by diamond drilling and sample drifting before mining commenced.

If sufficient risk capital is available for such a venture, it is recommended that the shaft should be sunk to an initial depth of 3,500 feet with the facility to sink deeper eventually, particularly in view of the potential estimated ore reserves quoted in Table 5B. The optimum shaft to facilitate ultimate exploitation would be a four compartment one with 6 feet by 6 feet compartments because this would allow ultimate sinking in depth below the 3,500 feet level without interruption in any production already established. Alternatively, in order to minimize costs, a three compartment 6 feet by 6 feet shaft could be sunk, but ultimate sinking below the initial 3,500 feet level without interruption of production would not be particularly easy with such a shaft. The basic cost of sinking a four compartment shaft to a depth of 3,500 feet at present rates is estimated at $2,000,000 with the basic cost of a three compartment shaft estimated at $1,750,000. These costs do not include the head frame, hoisting gear and shaft fittings, which it is estimated would cost some $500,000 if purchased new, but it should prove possible to obtain second-hand equipment for a lower figure, possibly around $300,000 or even less. Underground development aimed at exploring the orebody would involve the cutting of shaft stations and levels, drifting and crosscutting, raising and diamond drilling at an estimated total budget figure of $800,000, although this could possibly be reduced depending upon the findings, and it should be remembered that the exploration/development work is likely to produce some payable ore. Thus, the total cost of this course of action is estimated at $3,300,000 with a four compartment shaft and $3,050,000 with a three compartment shaft. It should be noted, however, that these costs only allow for basic mine shaft sinking, shaft equipping and exploration development costs for assessment of the porphyry body, and they include no allowance for the purchase of a full range of underground mining equipment, extensive mine development, and the construction of major surface installations such as power supply, water supply, buildings and milling facilities. Nevertheless, sinking and equipping of the shaft would greatly facilitate ultimate full exploitation, the estimated costs for which have been outlined in the March 1974 report of Mr. Isaacs. A comprehensive reappraisal of such establishment and operating costs would be the subject of a separate study involving capital expenditure, cash flow and related factors.
Mining methods employed would depend upon the findings of the exploration and development, but it is pertinent to note that Camflo utilizes both shrinkage stoping and open long-hole stoping from levels with sub-drifts along the foot-wall of the ore zones, according to the nature of the particular ore zone. At this stage no further comment on mining methods is appropriate, but it is pertinent to note that direct mining costs have increased from $3.25 per ton of ore in 1970 to a current level of over $7, with further increases likely.

6.3. **Shaft Site**

In view of the factors referred to in section 6.1. relating to the other potential gold production locations situated in reasonably close proximity to the projected Camflo porphyry extension, the recommendation of an optimum site for the establishment of an exploration and production shaft is somewhat contentious.

If the aim is simply maintained at exploiting the Camflo porphyry extension alone, then the site should lie along the projected line of strike of the porphyry extension at the 3,000, 4,000 and 6,000 feet levels. A recommended position of the site for a shaft to command the porphyry without extensive lateral level driving down to a depth of 3,500 feet is also indicated, but the precise location would depend upon a detailed field examination and the results of diamond drilling if any is carried out. By reference to Table 5B it will be seen that in sinking to the 3,500 feet level it is estimated that there will be 2,172,000 tons of ore on the Malartic property above the base of the shaft. The position on the northwest side of the porphyry has been selected, rather than the southeast side as in the case of the Camflo shaft, in order to give somewhat closer access from the same shaft to the unexplored Malartic porphyry should this eventually prove to carry ore; the same reasoning also applies to the main section of the vein zone area around the existing Malartic shaft, although in both cases the underground haulage distances from the recommended shaft site would be rather long. From the recommended shaft site, access to the lower extension of the Camflo porphyry would be gained by sinking the shaft deeper to the relevant depths and driving levels northeast along the porphyry extension line. A compromise which would give direct access by shaft to the Camflo porphyry below the 3,500 feet level and reduce level driving would be to sink the exploration shaft at an appro-

priate site further to the northeast along the porphyry extension line on its northwest side; this would also provide somewhat closer access to the unexplored Malartic porphyry and the vein zone area around the existing Malartic shaft. One other possibility with the least risk of all exists of gaining access to the extension of the Camflo porphyry on the Malartic property and this is via the existing Camflo shaft and workings. Although attempts to reach a joint venture agreement have failed to date, the possibility must still exist of coming to terms of some kind, which would allow in-depth exploration and development of the porphyry extension. If no agreement is reached, however, the Camflo operation must have a relatively limited remaining life, which is believed to be considerably less than the present seven years reported by Camflo based on claimed known ore reserves. Consequently, unless Camflo finds or acquires additional sources of ore, it will be faced with the eventual abandonment of its operations so that it should be possible for the surface and underground facilities to be acquired in due course for an independent operation. On closer examination of the situation, however, even though the recently-installed larger hoist and head frame have a rated capacity of mining to a depth of 5,000 feet, it would appear that the Camflo shaft is not ideally situated for exploitation of the porphyry extension onto the Malartic property because of the long underground haulage distances involved. A detailed feasibility study involving an examination of establishment and operating costs would be required to substantiate this latter observation. Furthermore, there is no certainty that the facilities will become available within the required time period, so that the overall logistics appear to support the requirement for a new and better situated shaft if an independent operation is to be mounted.

If the wider aspects are considered for an integrated programme involving all the potential gold production locations situated in close proximity to the projected Camflo porphyry extension on the Malartic property, the existing Malartic shaft site should not be overlooked because, although not ideally located, it is far from poorly situated with respect to the various potential gold production locations. Its advantages consist of ready access by way of a well-maintained all-weather dirt road, a prepared site, and various established facilities and services. The existing shaft hoist and head frame installed at the 450 feet deep three compartment shaft (an approximate levelling undertaken during the site visit indicates that the Malartic shaft collar is 25-50 feet higher than the Camflo shaft collar) would be quite inadequate for the proposed purposes, but the related sizeable and well-constructed buildings could be utilized, at least for the preliminary development. Furthermore, the partially-completed 300 tons of ore per day mill on the site could also be of use in generating a cash flow from any gold-bearing development ore produced, although a considerable amount of work is required before the mill is ready for operation, even though much equipment is already in place within the well-built housing; adequate comment and action on the latter would require the production of an equipment inventory and a detailed engineering appraisal. It has already been indicated above that the existing Malartic shaft site is not ideally located for an integrated programme, and a better site for a shaft would probably be some 1,000 feet southwest of the shaft for a combined attack on the Camflo porphyry extension, the unexplored Malartic porphyry and the vein zone area around the existing Malartic shaft; in such a case the existing Malartic shaft site facilities could provide a useful and convenient base.

Finally, the possibility should not be overlooked that it may eventually prove more desirable to have a separate shaft for each potential gold production location.

7. CONCLUSIONS AND RECOMMENDATIONS

Various conclusions and recommendations have been developed and drawn in the relevant sections above, and it is not intended to repeat all of these here. The main conclusion is that the Malartic property certainly has considerable gold production potential, not only from the extension of the Camflo porphyry body, but also from reasonably adjacent locations described and discussed in section 5, especially the unexplored Malartic porphyry body and the vein zone area around the existing Malartic shaft. Only those locations adjacent to the porphyry body extensions have been considered because it would be undesirable not to bear them in mind in formulating a mining programme. In accordance with the terms of reference, no consideration has been given in this study to other possible sources of gold ore on the Malartic property, although it must be mentioned that none have the immediately apparent potential of those dealt with, but other occurrences are known of and they should not be ignored.

Conventional mineral exploration and exploitation practice normally involves the proving or semi-proving of ore by diamond drilling ahead of any mining activity. However, the special circumstances of this case, particularly with respect to the existing knowledge of the Camflo porphyry body and the extrapolation of its extension onto the Malartic property, appear to warrant immediate shaft sinking for exploration/development purposes.

Support for this is derived when, the estimated $400,000 to $450,000 cost for a problematical ten hole surface diamond drilling programme (see section 6.2.) is compared with the estimated $3,300,000 cost of exploring the porphyry by means of a shaft which would be ideal for eventual full mine production.

Consequently, a strong case can be made for proceeding with the exploration/development of the Camflo porphyry extension alone with the best method of doing this most reliably and effectively appearing to be by the sinking and basic equipping of a four compartment vertical shaft to an initial depth of 3,500 feet at an estimated cost of $3,300,000. On the basis of the estimates presented in Table 5B, this would give access to 2,172,000 tons of ore on the Malartic property above the base of the shaft. Applying the average recovered grade of 0.251 ounces of gold per ton of ore reported for the 3,073,615 tons of ore milled to date from the Camflo Mine, the 2,172,000 tons of Malartic ore would contain 545,172 ounces of recoverable gold which at the current average gold price of $150 per ounce would be worth $81,775,800. On a much more speculative basis than the potential for sinking to 3,500 feet, but also accessible by sinking the shaft deeper and driving levels laterally, there could be an estimated further 5,750,000 tons of ore on the Malartic property between the depths of 3,500 feet and 6,000 feet, as indicated in Table 5B. Calculating on the same basis as for the ore above the 3,500 feet level, the 5,750,000 tons of ore would contain 1,443,250 ounces of recoverable gold worth $216,487,500. It must again be strongly emphasized that these figures are certainly not proved, although there can be reasonable confidence with respect to the ore above the 3,500 feet level. Nevertheless, the figures have been derived from factually-based and studied assumptions, and they serve to quantify the potential return for the relatively small amount of high risk capital required to proceed with the project.

Although a strong case can be made for proceeding with exploitation of the Camflo porphyry extension alone, and this may well be the best initial course of action, it is recommended for overall logistical reasons related to rational development of the property that consideration should also be given to an integrated programme including the other adjacent potential gold producing locations. This will require further detailed assessment because nothing is known of the in-depth configuration and gold content of the unexplored Malartic porphyry. Furthermore, in the vein zone area around the Malartic shaft only 86,800 tons of ore with an average cut grade of 0.74 ounces of gold per ton containing 64,232 ounces of gold has been proved to date according to Dr. Ingham's assessment and calculations, and an unquantified amount of this ore was worked during the mining activity from the Malartic shaft during the early 1960's. The further assessment would involve a collation and detailed study of all previous diamond drilling and technical data, field mapping, geophysical investigations and comprehensive diamond drilling.

TABLE 1

Camflo Mine Underground Boundary Survey Results

Mine level (feet)	*Horizontal distance of level heading from Camflo-Malartic common boundary (feet)*
1,950	40
2,050	8
2,100	20
2,250	60
2,400	50
2,550	70

TABLE 2

Output of Principal Canadian Lode Gold Producers

1973 Producers	*1972 Production (ounces)*[1]
Quebec	
Agnico-Eagle[2]	—
Camflo	100,101
East Malartic-Barnat	69,288
Goldex[3]	—
Lamaque (Lamaque Division)	81,815
Marban	27,266
Sigma	85,614
Ontario	
Campbell Red Lake	196,855
Dickenson	52,728
Dome	146,242
Hollinger (Ross)	24,227
Kerr Addison	135,860
Madsen Red Lake	37,696
McIntyre Porcupine	86,638
Pamour Porcupine (No. 1, 2 and 3)	147,174
Robin Red Lake	33,669
Willroy (Macassa Division)	68,213
Northwest Territories	
Cominco (Con. and Rycon)	106,293
Giant Yellowknife	128,272
Lolor	33,471
Supercrest	39,443

NOTES

[1] 1973 collated production figures are not available to date from the Canadian Government Department of Mines, Energy and Resources in Ottawa.

[2] Mine opened in 1973.

[3] Mine under development in 1973-1974.

TABLE 3

Volume and Grade of Camflo Porphyry Ore by Levels

Mine level (feet)	*Tons of ore per vertical foot*	*Ounces of gold per ton*
450 to 600	1,593	0.231
600 to 750	3,533	0.280
750 to 900	2,663	0.247
900 to 1,100	1,697	0.226
1,100 to 1,300	2,677	0.271
1,300 to 1,500	2,525	0.298
1,500 to 1,650	2,680	0.246
1,650 to 1,800	2,390	0.262
1,800 to 1,950	3,426	0.240
1,950 to 2,100	1,003	0.318
Weighted Average	2,408	0.261

TABLE 4

Summary of 1973 Camflo Ore Production by Levels

Mine level (feet)	*Tons of ore*	*Ounces of gold per ton*
750 to 900	7,549	0.204
900 to 1,100	45,456	0.186
1,100 to 1,300	90,579	0.243
1,300 to 1,500	75,717	0.249
1,500 to 1,650	44,638	0.214
1,650 to 1,800	40,539	0.449
1,800 to 1,950	55,079	0.282
1,950 to 2,100	19,365	0.146
2,100 to 2,250	7,572	0.135
2,250 to 2,400	2,098	0.085
2,400 to 2,550	1,030	0.125
	389,622*	0.251†

* Total

† Recovered Grade

TABLE 5A

Estimated Porphyry Ore remaining on the Camflo and Malartic Properties to the 4,000 Feet Level — Camflo Version

	Camflo		Malartic	
Mine level (feet)	*Tons of ore per vertical foot*	*Total tons of ore*	*Tons of ore per vertical foot*	*Total tons of ore*
450 to 2,100	2,408	910,200	—	—
2,100 to 2,400	2,000	600,000	300	90,000
2,400 to 2,600	1,300	260,000	1,000	200,000
2,600 to 3,200	900	540,000	1,400	840,000
3,200 to 4,000	—	—	2,300	1,840,000
Total		2,310,200		2,970,000

TABLE 5B

Estimated Porphyry Ore remaining on the Camflo and Malartic Properties to the 6,000 Feet Level — Reappraisal

	Camflo		Malartic		
Mine level (feet)	*Tons of ore per vertical foot*	*Total tons of ore*	*Tons of ore per vertical foot*	*Total tons of ore*	*Cumulative total tons of ore*
450 to 2,100	2,408	910,200	—	—	—
2,100 to 2,400	2,000	600,000	300	90,000	90,000
2,400 to 2,600	1,490	298,000	810	162,000	252,000
2,600 to 3,200	250	150,000	2,050	1,230,000	1,482,000
3,200 to 3,500	—	—	2,300	690,000	2,172,000
3,500 to 4,000	—	—	2,300	1,150,000	3,322,000
4,000 to 6,000	—	—	2,300	4,600,000	7,922,000
Total		1,958,200		7,922,000	

Certificate

I, BRIAN L. HODGE, of B. L. Hodge and Partners, London, England, do hereby certify as follows:

(a) I am a Geologist and Chartered Engineer carrying on a consulting partnership practice with an office at 14 Bolton Street, London W1Y 7PA, England.

(b) I attended the University of Durham, England, where I gained the Bachelor of Science and Doctor of Philosophy degrees in Geology. I am a Fellow of the Geological Society of London, a Member of the American Institute of Mining Engineers, a Member of the Society of Economic Geologists, a Fellow of the Institution of Mining and Metallurgy and a Chartered Engineer. I have had some 17 years post-graduate experience within the minerals industry in the fields of research, exploration and development, mining, milling, mineral economics and management in the university world, industry and as a consultant in Australia, Canada, France, Ireland, Italy, Kenya, Mexico, South Africa, Spain, Thailand, the UK and the USA.

(c) I and my partnership colleagues have no interest either directly or indirectly, nor do we expect to receive any interest either directly or indirectly in the property or securities of Malartic Hygrade Gold Mines (Canada) Limited, except such agreed fees and expenses as may be paid to B.L. Hodge and Partners for services rendered as consultants in accordance with our normal terms of business.

(d) My accompanying report to Malartic Hygrade Gold Mines (Canada) Limited is based on the terms of reference and methodology described in sections 1. and 2. of the report.

October 1974

B. L. HODGE

Balance Sheet

As at September 30, 1975

Assets

Current Assets		
Bank term deposits and balances		$ 789,079
Accounts receivable		6,505
Prepaid expenses and accrued income		44,404
		$ 839,988
Investments (at cost)		
Government of Canada bonds — 9¼ % — February 1/77 (par $300,000)		301,100
Building, Machinery and Equipment (at cost)		1,134,560
Mining Properties and Claims (at cost)		
Malartic Township, P.Q. — Note 3	$1,750,000	
Dasserat Township, P.Q. — Note 4	1	
Montbeillard Township, P.Q. — Note 5	1	
Poirier Township, P.Q. — Note 6	1,001	1,751,003
Deferred Expenditures		
Exploration, development and administration costs — See page 27		794,439
Total Assets		$4,821,090

Approved on behalf of the Board of Directors:
J. S. Belton, President
Peter Jarvis, Director

Malartic
Hygrade
Gold Mines
(Canada) Ltd.

Liabilities

Current Liabilities	
Accounts payable and accrued liabilities	$ 34,089
Long Term Liabilities	
Convertible income debentures — secured — Note 7	1,200,000
Total Liabilities	$1,234,089

Shareholders' Equity

Capital Stock	
Authorized:	
5,000,000 shares of no par value — aggregate issue consideration not to exceed $15,000,000	
Capital Stock	
Issued and fully paid:	
2,841,687 shares — for consideration — Note 2	3,587,001
Total Liabilities and Shareholders' Equity	$4,821,090

Auditors' Report

To the Shareholders of
Malartic Hygrade Gold Mines (Canada) Ltd.

We have examined the balance sheet of Malartic Hygrade Gold Mines (Canada) Ltd. as at September 30, 1975 and the statement of deferred expenditures for the period then ended. Our examination included a general review of the accounting procedures and such tests of accounting records and other supporting evidence as we considered necessary in the circumstances.

In our opinion these financial statements present fairly the financial position of the company as at September 30, 1975 and the results of its operations for the period then ended, in accordance with generally accepted accounting principles.

Respectfully submitted,

HARRY AND COMPANY,
Chartered Accountants

Toronto, Canada,
February 10, 1976.

Notes to the Financial Statements

As at September 30, 1975

1 — The company was incorporated under the laws of the Province of Ontario on February 4th, 1975.

2 — Under the terms of an agreement dated February 28, 1975, the Company acquired all the assets and assumed all the liabilities of Malartic Hygrade Gold Mines (Quebec) Limited. The consideration for the purchase was the issue of 2,841,687 fully paid and non-assessable shares in the Company. The Directors of the Company have determined the value of the shares, so issued, to be $3,587,001 allocated as follows:

Assets acquired:	
Cash and cash equivalents	$ 832,738
Marketable bonds (at cost)	301,100
Building, machinery and equipment	1,134,560
Mining properties and claims	1,751,003
Deferred mine development costs	780,777
	$4,800,178
Liabilities assumed	1,213,177
Net assets acquired	$3,587,001

3 — The Company owns eight mining development licences (comprising sixteen claims) covering a total of 1,250 acres in Malartic Township in the Province of Quebec. These contiguous mining claims were acquired at a cost of $1,750,000.

4 — The Company owns two development licences in the Township of Dasserat in the County of Rouyn-Noranda, P.Q. acquired at a cost of $1.

5 — The Company owns three claims in the Township of Montbeillard in the County of Rouyn-Noranda, P.Q., acquired at a cost of $1.

6 — The Company owns eight mining development licences/concessions in the Township of Poirier in the County of East Abitibi, P.Q., acquired at a cost of $1,001.

7 — The 9% Convertible Income Debentures are dated April 1st, 1974 and mature March 31st, 1979. The debentures are secured by a first fixed and floating charge on all present and future assets of the company. The debentures are convertible at the option of the holder into fully paid and non-assessable shares of the company on the basis of 25 of such shares for each $100 principal amount thereof. Each $100 principal amount of debentures also entitles the holder of such debentures to a share purchase warrant of 12.5 fully paid and non-assessable shares at $10 each.
Interest on these debentures is payable yearly on April 1st, only if the earnings of the company (as defined in the Trust Deed) for the previous fiscal year equal at least three times the amount required to pay interest for such mentioned fiscal year. The debentures are redeemable at par, plus a premium of 7½%.

8 — The company has filed a writ in the Superior Court of Ontario against Camflo Mines Limited for damages and for an injunction preventing the defendant from trespassing on the lands of the company.
The solicitor for the company estimates that future legal fees and court costs will be approximately $15,000.

9 — The company instituted an action against a Quebec government regulatory body and some of its officers for the suspension of trading in the shares of the company. This action was dismissed with nominal costs, and an appeal has been made to the appropriate Court of Appeal. No estimate of future costs is available at this time.

Statement of Deferred Exploration, Development and Administrative Expenditures

Malartic Hygrade Gold Mines (Canada) Ltd.

For the period from Incorporation (February 4, 1975) to September 30, 1975

Deferred Expenditures — March 1, 1975 — Note 2			$780,777
Exploration and Development			
Malartic Twp.			
Feasibility studies		$ 2,741	
Surveying and drilling		427	
Mine salary and benefits		3,025	
Government fees and licences		637	
Insurance and taxes		3,399	$ 10,229
Dasserat Twp.			
Government fees and licences			230
Poirier Twp.			
Government fees and licences			300
Montbeillard Twp.			
Government fees and licences			28
			$ 10,787
Administration			
Officers' salaries and allowances		$ 6,950	
Directors' fees		3,000	
Consulting fees		5,250	
Travelling expenses		1,043	
Legal fees		28,611	
Legal — Incorporation and organization		13,602	
Accounting and audit fees		2,100	
Office rent		6,400	
Office and telephone expenses		4,363	
Printing and stationery		1,283	
Transfer agent expenses		102	
General expenses		219	
		$72,923	
Less: Interest earned	$ 60,754		
Office overhead recovery	3,301		
Expense recovery — accruals	5,993	70,048	
			2,875
Total Current Expenditures			$ 13,662
Deferred Expenditures — September 30, 1975 — To page 24			$794,439

Malartic
Hygrade
Gold Mines
(Canada) Ltd.